

WHAT IS CLAIMED IS:

1. A process for the partial purification of pond water such that said pond water can be further purified by the removal of essentially pure water without solids precipitation, comprising the steps of:

adding a first compound to a quantity of pond water to increase the pH of the resulting solution, said first compound being a base or forming a base when water is present, said first compound having a cationic portion that causes the phosphate salts thereof to remain soluble in said solution,

allowing the precipitates thus formed to settle,

separating the clarified liquid portion of the mixture, holding said liquid portion of the mixture for a time period sufficient to allow the silicic acid present to decompose into hydrated silicon dioxide, separating the hydrated silicon dioxide sludge; and

adding a second compound to decrease the pH of the solution, said added second compound being an acid or acid-forming compound such that the solubility of the ions remaining in solution is increased.

2. The process, as claimed in claim 1, wherein said first compound is selected from the group including sodium hydroxide and potassium hydroxide.

3. The process, as claimed in claim 1, wherein said first compound is ammonia.

4. The process, as claimed in claim 1, wherein said first compound is added to said pond water as an aqueous solution.

5. The process, as claimed in claim 1, wherein said first compound is added to said pond water in anhydrous or essentially anhydrous form.

6. The process, as claimed in claim 1, wherein said first compound is added to said pond water in sufficient quantity to increase the pH of said resulting solution to a value within the range of 6.0 to 8.0.

7. The process, as claimed in claim 1, wherein said first compound is added to said pond water in sufficient quantity to increase the pH of said resulting solution to a value within the range of 6.5 to 7.5.

8. The process, as claimed in claim 1, wherein after separating an essentially clear liquid from said precipitates formed as a result of the addition of said first compound, the clear liquid is aged for a time period within the range of 16 hours to 10 days.

9. The process, as claimed in claim 1, wherein after separating an essentially clear liquid from the sludge formed as a result of the addition of the first compound, the clear liquid is aged for a time period within the range of 36 hours to 72 hours.

10. The process, as claimed in claim 1, wherein after separating said hydrated silicon dioxide sludge, said second compound is added to said clear liquid thus obtained in sufficient quantity to lower the pH of the solution to a value within the range of 2.0 to 4.0.

11. The process, as claimed in claim 1, wherein after separating said hydrated silicon dioxide sludge, said second compound is added to said clear liquid thus obtained in sufficient quantity to lower the pH of the solution to a value within the range of 2.5 to 3.5.

12. The process, as claimed in claim 1, wherein after separating said hydrated silicon dioxide sludge, said second compound is added to said clear liquid thus obtained in sufficient quantity to lower the pH of the solution to a value within the range of 2.9 to 3.1.

13. The process, as claimed in claim 1, wherein said second compound added to said clear liquid obtained after the separation of said hydrated silicon dioxide sludge is selected from the group including sulfuric acid, sulfurous acid, phosphoric acid, hydrochloric acid and nitric acid.

14. The process, as claimed in claim 1, wherein said second compound added to said clear liquid obtained after the separation of said hydrated silicon dioxide sludge is sulfuric acid.

15. The process, as claimed in claim 1, wherein after separating said hydrated silicon dioxide sludge, said second acid-forming compound is added to said clear liquid thus obtained in sufficient quantity to lower the pH of the solution to a value within the range of 2.0 to 4.0.

16. The process, as claimed in claim 1, wherein after separating said hydrated silicon dioxide sludge, said second acid-forming compound is added to said clear liquid thus obtained in sufficient quantity to lower the pH of the solution to a value within the range of 2.5 to 3.5.

17. The process, as claimed in claim 1, wherein after separating said hydrated silicon dioxide sludge, said second acid-forming compound is added to said clear liquid thus obtained in sufficient quantity to lower the pH of the solution to a value within the range of 2.9 to 3.1.

18. The process, as claimed in claim 1, wherein said second acid-forming compound added to said clear liquid obtained after the separation of said hydrated silicon dioxide sludge, is selected from the group including sulfur trioxide, sulfur dioxide, hydrogen chloride and nitrogen dioxide.